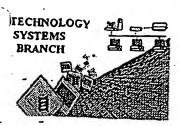*ep*

RAW SEQUENCE LISTING
ERROR REPORT

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form:

Application Serial Number: 10/656,093

Source: OIPE

Date Processed by STIC: 9-16-03

THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.
PLEASE FORWARD THIS INFORMATION TO THE APPLICANT BY EITHER:
1) INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANT, WITH A NOTICE TO COMPLY or,
2) TELEPHONING APPLICANT AND FAXING A COPY OF THIS PRINTOUT, WITH A NOTICE TO COMPLY

FOR CRF SUBMISSION AND PATENTIN SOFTWARE QUESTIONS, PLEASE CONTACT MARK SPENCER, 703-308-4212.

TO REDUCE ERRORED SEQUENCE LISTINGS, PLEASE USE THE <u>CHECKER</u> <u>VERSION 4.0 PROGRAM</u>, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW FOR ADDRESS:
    http://www.uspto.gov/web/offices/pac/checker

Applicants submitting genetic sequence information electronically on diskette or CD-Rom should be aware that there is a possibility that the disk/CD-Rom may have been affected by treatment given to all incoming mail.
Please consider using alternate methods of submission for the disk/CD-Rom or replacement disk/CD-Rom.
<u>Any reply including a sequence listing in electronic form should NOT be sent to the 20231 zip code address for the United States Patent and Trademark Office, and instead should be sent via the following to the indicated addresses:</u>

1. EFS-Bio (<http://www.uspto.gov/ebc/efs/downloads/documents.htm> , EFS Submission User Manual - ePAVE)
2. U.S. Postal Service: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450
3. Hand Carry directly to:
    U.S. Patent and Trademark Office, Technology Center 1600, Reception Area, 7th Floor, Examiner Name, Sequence Information, Crystal Mall One, 1911 South Clark Street, Arlington, VA 22202
            Or
    U.S. Patent and Trademark Office, Box Sequence, Customer Window, Lobby, Room 1B03, Crystal Plaza Two, 2011 South Clark Place, Arlington, VA 22202
4. Federal Express, United Parcel Service, or other delivery service to: U.S. Patent and Trademark Office, Box Sequence, Room 1B03-Mailroom, Crystal Plaza Two, 2011 South Clark Place, Arlington, VA 22202

Revised 04/24/2003

Raw Sequence Listing Error Summary

| ERROR DETECTED | SUGGESTED CORRECTION | SERIAL NUMBER: 10/656,093 |

ATTN: NEW RULES CASES: PLEASE DISREGARD ENGLISH "ALPHA" HEADERS, WHICH WERE INSERTED BY PTO SOFTWARE

1_____ Wrapped Nucleics The number/text at the end of each line "wrapped" down to the next line. This may occur if your file
Wrapped Aminos was retrieved in a word processor after creating it. Please adjust your right margin to .3; this will
prevent "wrapping."

2_____ Invalid Line Length The rules require that a line not exceed 72 characters in length. This includes white spaces.

3_____ Misaligned Amino The numbering under each 5th amino acid is misaligned. Do not use tab codes between numbers;
Numbering use space characters, instead.

4_____ Non-ASCII The submitted file was not saved in ASCII(DOS) text, as required by the Sequence Rules. Please
ensure your subsequent submission is saved in ASCII text.

5_____ Variable Length Sequence(s)_____contain n's or Xaa's representing more than one residue. Per Sequence Rules,
each n or Xaa can only represent a single residue. Please present the maximum number of each
residue having variable length and indicate in the <220>-<223> section that some may be missing.

6_____ PatentIn 2.0 A "bug" in PatentIn version 2.0 has caused the <220>-<223> section to be missing from amino acid
"bug" sequences(s) _____. Normally, PatentIn would automatically generate this section from the
previously coded nucleic acid sequence. Please manually copy the relevant <220>-<223> section to
the subsequent amino acid sequence. This applies to the mandatory <220>-<223> sections for
Artificial or Unknown sequences.

7_____ Skipped Sequences Sequence(s) _____ missing. If intentional, please insert the following lines for each skipped sequence:
(OLD RULES) (2) INFORMATION FOR SEQ ID NO:X: (insert SEQ ID NO where "X" is shown)
(i)   SEQUENCE CHARACTERISTICS: (Do not insert any subheadings under this heading)
(xi) SEQUENCE DESCRIPTION:SEQ ID NO:X: (insert SEQ ID NO where "X" is shown)
This sequence is intentionally skipped

Please also adjust the "(ii) NUMBER OF SEQUENCES:" response to include the skipped sequences.

8_____ Skipped Sequences Sequence(s) _____ missing. If Intentional, please insert the following lines for each skipped sequence.
(NEW RULES) <210> sequence id number
<400> sequence id number
000

9_____ Use of n's or Xaa's Use of n's and/or Xaa's have been detected in the Sequence Listing.
(NEW RULES) Per 1.823 of Sequence Rules, use of <220>-<223> is MANDATORY if n's or Xaa's are present.
In <220> to <223> section, please explain location of n or Xaa, and which residue n or Xaa represents.

10_____ Invalid <213> Per 1.823 of Sequence Rules, the only valid <213> responses are: Unknown, Artificial Sequence, or
Response scientific name (Genus/species). <220>-<223> section is required when <213> response is Unknown or
is Artificial Sequence

11_____ Use of <220> Sequence(s) _____ missing the <220> "Feature" and associated numeric identifiers and responses.
Use of <220> to <223> is MANDATORY if <213> "Organism" response is "Artificial Sequence" or
"Unknown." Please explain source of genetic material in <220> to <223> section.
(See "Federal Register," 06/01/1998, Vol. 63, No. 104, pp. 29631-32)   (Sec. 1.823 of Sequence Rules)

12_____ PatentIn 2.0 Please do not use "Copy to Disk" function of PatentIn version 2.0. This causes a corrupted file,
"bug" resulting in missing mandatory numeric identifiers and responses (as indicated on raw sequence
listing). Instead, please use "File Manager" or any other manual means to copy file to floppy disk.

13_____ Misuse of n/Xaa "n" can only represent a single nucleotide; "Xaa" can only represent a single amino acid

OIPE

FEB 11 2004

PATENT & TRADEMARK OFFICE

OIPE

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/656,093

DATE: 09/16/2003
TIME: 10:48:00

Input Set : A:\256-152div.txt
Output Set: N:\CRF4\09162003\J656093.raw

```
 3 <110> APPLICANT: YOUNG, ANDREW A.
 4          VINE, WILL
 5          BEELEY, NIGEL R.A.
 6          PRICKETT, KATHRYN S.
 8 <120> TITLE OF INVENTION: INOTROPIC AND DIURETIC EFFECTS OF GLP-1 AND GLP-1 AGONISTS
10 <130> FILE REFERENCE: 256-152DIV US
C--> 12 <140> CURRENT APPLICATION NUMBER: US/10/656,093
C--> 13 <141> CURRENT FILING DATE: 2003-09-05
15 <160> NUMBER OF SEQ ID NOS: 75
17 <170> SOFTWARE: PatentIn Ver. 2.1
19 <210> SEQ ID NO: 1
20 <211> LENGTH: 39
21 <212> TYPE: PRT
22 <213> ORGANISM: Heloderma horridum
24 <220> FEATURE:
25 <223> OTHER INFORMATION: Exendin-3
27 <400> SEQUENCE: 1
28 His Ser Asp Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
29   1              5                  10                 15
31 Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
32              20                  25                 30
34 Ser Gly Ala Pro Pro Pro Ser
35              35
38 <210> SEQ ID NO: 2
39 <211> LENGTH: 39
40 <212> TYPE: PRT
41 <213> ORGANISM: Heloderma suspectum
43 <220> FEATURE:
44 <223> OTHER INFORMATION: Exendin-4
46 <400> SEQUENCE: 2
47 His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
48   1              5                  10                 15
50 Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
51              20                  25                 30
53 Ser Gly Ala Pro Pro Pro Ser
54              35
57 <210> SEQ ID NO: 3
58 <211> LENGTH: 30
59 <212> TYPE: PRT
60 <213> ORGANISM: Homo sapiens
62 <220> FEATURE:
63 <223> OTHER INFORMATION: GLP-1
65 <400> SEQUENCE: 3
```

Does Not Comply
Corrected Diskette Needed

P. 4, 6

RAW SEQUENCE LISTING   DATE: 09/16/2003
PATENT APPLICATION: US/10/656,093   TIME: 10:48:00

Input Set : A:\256-152div.txt
Output Set: N:\CRF4\09162003\J656093.raw

```
66 His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
67  1               5                  10                  15
69 Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg
70              20                  25                  30
73 <210> SEQ ID NO: 4
74 <211> LENGTH: 39
75 <212> TYPE: PRT
76 <213> ORGANISM: Artificial Sequence
78 <220> FEATURE:
79 <223> OTHER INFORMATION: Description of Artificial Sequence: Exendin or
80       exendin agonist
82 <220> FEATURE:
83 <221> NAME/KEY: MOD_RES
84 <222> LOCATION: (1)
85 <223> OTHER INFORMATION: His, Arg or Tyr
87 <220> FEATURE:
88 <221> NAME/KEY: MOD_RES
89 <222> LOCATION: (2)
90 <223> OTHER INFORMATION: Ser, Gly, Ala or Thr
92 <220> FEATURE:
93 <221> NAME/KEY: MOD_RES
94 <222> LOCATION: (3)
95 <223> OTHER INFORMATION: Asp or Glu
97 <220> FEATURE:
98 <221> NAME/KEY: MOD_RES
99 <222> LOCATION: (5)
100 <223> OTHER INFORMATION: Ala or Thr
102 <220> FEATURE:
103 <221> NAME/KEY: MOD_RES
104 <222> LOCATION: (6)
105 <223> OTHER INFORMATION: Ala, Phe, Tyr or naphthylalanine
107 <220> FEATURE:
108 <221> NAME/KEY: MOD_RES
109 <222> LOCATION: (7)
110 <223> OTHER INFORMATION: Thr or Ser
112 <220> FEATURE:
113 <221> NAME/KEY: MOD_RES
114 <222> LOCATION: (8)
115 <223> OTHER INFORMATION: Ala, Ser or Thr
117 <220> FEATURE:
118 <221> NAME/KEY: MOD_RES
119 <222> LOCATION: (9)
120 <223> OTHER INFORMATION: Asp or Glu
122 <220> FEATURE:
123 <221> NAME/KEY: MOD_RES
124 <222> LOCATION: (10)
125 <223> OTHER INFORMATION: Ala, Leu, Ile, Val, pentylglycine or Met
127 <220> FEATURE:
128 <221> NAME/KEY: MOD_RES
```

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/656,093

DATE: 09/16/2003
TIME: 10:48:00

Input Set : A:\256-152div.txt
Output S t: N:\CRF4\09162003\J656093.raw

```
129 <222> LOCATION: (11)
130 <223> OTHER INFORMATION: Ala or Ser
132 <220> FEATURE:
133 <221> NAME/KEY: MOD_RES
134 <222> LOCATION: (12)
135 <223> OTHER INFORMATION: Ala or Lys
137 <220> FEATURE:
138 <221> NAME/KEY: MOD_RES
139 <222> LOCATION: (13)
140 <223> OTHER INFORMATION: Ala or Gln
142 <220> FEATURE:
143 <221> NAME/KEY: MOD_RES
144 <222> LOCATION: (14)
145 <223> OTHER INFORMATION: Ala, Leu, Ile, pentylglycine, Val or Met
147 <220> FEATURE:
148 <221> NAME/KEY: MOD_RES
149 <222> LOCATION: (15)...(17)
150 <223> OTHER INFORMATION: Ala or Glu
152 <220> FEATURE:
153 <221> NAME/KEY: MOD_RES
154 <222> LOCATION: (19)
155 <223> OTHER INFORMATION: Ala or Val
157 <220> FEATURE:
158 <221> NAME/KEY: MOD_RES
159 <222> LOCATION: (20)
160 <223> OTHER INFORMATION: Ala or Arg
162 <220> FEATURE:
163 <221> NAME/KEY: MOD_RES
164 <222> LOCATION: (21)
165 <223> OTHER INFORMATION: Ala or Leu
167 <220> FEATURE:
168 <221> NAME/KEY: MOD_RES
169 <222> LOCATION: (22)
170 <223> OTHER INFORMATION: Phe, Tyr or naphthylalanine
172 <220> FEATURE:
173 <221> NAME/KEY: MOD_RES
174 <222> LOCATION: (23)
175 <223> OTHER INFORMATION: Ile, Val, Leu, pentylglycine, tert-butylglycine or Met
177 <220> FEATURE:
178 <221> NAME/KEY: MOD_RES
179 <222> LOCATION: (24)
180 <223> OTHER INFORMATION: Ala, Glu or Asp
182 <220> FEATURE:
183 <221> NAME/KEY: MOD_RES
184 <222> LOCATION: (25)
185 <223> OTHER INFORMATION: Ala, Trp, Phe, Tyr or naphthylalanine
187 <220> FEATURE:
188 <221> NAME/KEY: MOD_RES
189 <222> LOCATION: (26)
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RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/656,093

DATE: 09/16/2003
TIME: 10:48:00

Input Set : A:\256-152div.txt
Output Set: N:\CRF4\09162003\J656093.raw

```
190 <223> OTHER INFORMATION: Ala or Leu
192 <220> FEATURE:
193 <221> NAME/KEY: MOD_RES
194 <222> LOCATION: (27)
195 <223> OTHER INFORMATION: Ala or Lys
197 <220> FEATURE:
198 <221> NAME/KEY: MOD_RES
199 <222> LOCATION: (28)
200 <223> OTHER INFORMATION: Ala or Asn
202 <220> FEATURE:
203 <221> NAME/KEY: MOD_RES
204 <222> LOCATION: (31)
205 <223> OTHER INFORMATION: Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine
206       N-alkylpentylglycine or N-alkylalanine
208 <220> FEATURE:
209 <221> NAME/KEY: MOD_RES
210 <222> LOCATION: (36)..(38)
211 <223> OTHER INFORMATION: Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine
212       N-alkylpentylglycine or N-alkylalanine
214 <220> FEATURE:
215 <221> NAME/KEY: MOD_RES
216 <222> LOCATION: (39)
217 <223> OTHER INFORMATION: Ser, Thr, Tyr, Pro, homoproline, 3Hyp, 4Hyp, thioproline,
218       N-alkylglycine, N-alkylpentylglycine or N-alkylalanine
220 <220> FEATURE:
221 <223> OTHER INFORMATION: provided no more than three of Xaa3, Xaa5, Xaa6, Xaa8,
222       Xaa10, Xaa11, Xaa12, Xaa13, Xaa14, Xaa15, Xaa16, Xaa17,
223       Xaa19, Xaa20, Xaa21, Xaa24, Xaa25, Xaa26, Xaa27 or Xaa28
224       are Ala; and the compound is not exendin-3 or exendin-4
226 <220> FEATURE:
227 <223> OTHER INFORMATION: this peptide may encompass 28-39 residues, wherein
228       residues 1-28 are constant and residues 29-39 may vary
229       in length according to the specification
231 <400> SEQUENCE: 4
232 Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
233  1               5                   10                  15
235 Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
236             20                  25                  30
238 Xaa Xaa Xaa Xaa Xaa Xaa Xaa
239             35
241 <210> SEQ ID NO: 5
242 <211> LENGTH: 30
243 <212> TYPE: PRT
244 <213> ORGANISM: Artificial Sequence
246 <220> FEATURE:
247 <223> OTHER INFORMATION: Description of Artificial Sequence: Exendin or
248       GLP-1 agonist
250 <220> FEATURE:
251 <223> OTHER INFORMATION: C-term may be amidated
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W-->

(handwritten: Invalid see item 5 on error summary sheet.)

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/656,093

DATE: 09/16/2003
TIME: 10:48:00

Input Set : A:\256-152div.txt
Output Set: N:\CRF4\09162003\J656093.raw

```
253 <400> SEQUENCE: 5
254 His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
255  1          5                  10                  15
257 Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly
258          20                  25                  30
261 <210> SEQ ID NO: 6
262 <211> LENGTH: 28
263 <212> TYPE: PRT
264 <213> ORGANISM: Artificial Sequence
266 <220> FEATURE:
267 <223> OTHER INFORMATION: Description of Artificial Sequence: Exendin or
268       GLP-1 agonist
270 <220> FEATURE:
271 <223> OTHER INFORMATION: C-term amidated
273 <400> SEQUENCE: 6
274 His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
275  1          5                  10                  15
277 Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn
278          20                  25
281 <210> SEQ ID NO: 7
282 <211> LENGTH: 28
283 <212> TYPE: PRT
284 <213> ORGANISM: Artificial Sequence
286 <220> FEATURE:
287 <223> OTHER INFORMATION: Description of Artificial Sequence: Exendin or
288       GLP-1 agonist
290 <220> FEATURE:
291 <223> OTHER INFORMATION: C-term amidated
293 <400> SEQUENCE: 7
294 His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
295  1          5                  10                  15
297 Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
298          20                  25
301 <210> SEQ ID NO: 8
302 <211> LENGTH: 28
303 <212> TYPE: PRT
304 <213> ORGANISM: Artificial Sequence
306 <220> FEATURE:
307 <223> OTHER INFORMATION: Description of Artificial Sequence: Exendin or
308       GLP-1 agonist
310 <220> FEATURE:
311 <223> OTHER INFORMATION: C-term amidated
313 <400> SEQUENCE: 8
314 His Ala Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
315  1          5                  10                  15
317 Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
318          20                  25
321 <210> SEQ ID NO: 9
322 <211> LENGTH: 28
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RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 09/16/2003
PATENT APPLICATION: US/10/656,093   TIME: 10:48:01

Input Set : A:\256-152div.txt
Output Set: N:\CRF4\09162003\J656093.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:4; Xaa Pos. 1,2,3,5,6,7,8,9,10,11,12,13,14,15,16,17,19,20,21,22,23,24
Seq#:4; Xaa Pos. 25,26,27,28,29,30,31,32,33,34,35,36,37,38,39
Seq#:47; Xaa Pos. 31,36,37,38
Seq#:48; Xaa Pos. 36,37,38
Seq#:49; Xaa Pos. 31
Seq#:50; Xaa Pos. 31,36,37
Seq#:51; Xaa Pos. 31,36,37
Seq#:52; Xaa Pos. 31,36
Seq#:55; Xaa Pos. 6
Seq#:59; Xaa Pos. 10
Seq#:60; Xaa Pos. 22
Seq#:61; Xaa Pos. 23
Seq#:65; Xaa Pos. 31,36,37
Seq#:66; Xaa Pos. 19
Seq#:67; Xaa Pos. 17
Seq#:75; Xaa Pos. 29

VERIFICATION SUMMARY
PATENT APPLICATION: US/10/656,093

DATE: 09/16/2003
TIME: 10:48:01

Input Set : A:\256-152div.txt
Output Set: N:\CRF4\09162003\J656093.raw

```
L:12 M:270 C: Current Application Number differs, Replaced Application Number
L:13 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:232 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:0
M:341 Repeated in SeqNo=4
L:1131 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:47 after pos.:16
M:341 Repeated in SeqNo=47
L:1162 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:48 after pos.:32
L:1187 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:49 after pos.:16
L:1220 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:50 after pos.:16
M:341 Repeated in SeqNo=50
L:1253 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:51 after pos.:16
M:341 Repeated in SeqNo=51
L:1286 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:52 after pos.:16
M:341 Repeated in SeqNo=52
L:1354 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:55 after pos.:0
L:1439 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:59 after pos.:0
L:1467 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:60 after pos.:16
L:1492 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:61 after pos.:16
L:1585 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:65 after pos.:16
M:341 Repeated in SeqNo=65
L:1635 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:66 after pos.:16
L:1642 M:220 C: Keyword misspelled or invalid format, <213> ORGANISM for SEQ ID#:67
L:1673 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:67 after pos.:16
L:1878 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:75 after pos.:16
```

256-152div corrected in response to notice to comply.txt
SEQUENCE LISTING

<110> YOUNG, ANDREW A.
       VINE, WILL
       BEELEY, NIGEL R.A.
       PRICKETT, KATHRYN S.

<120> INOTROPIC AND DIURETIC EFFECTS OF GLP-1 AND GLP-1 AGONISTS

<130> 256-152DIV US

<140> 10/656,093
<141> 2003-09-05

<160> 75

<170> PatentIn Ver. 2.1

<210> 1
<211> 39
<212> PRT
<213> Heloderma horridum

<220>
<223> Exendin-3

<400> 1
His Ser Asp Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
                20   25   30

Ser Gly Ala Pro Pro Pro Ser
            35

<210> 2
<211> 39
<212> PRT
<213> Heloderma suspectum

<220>
<223> Exendin-4

<400> 2
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 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
                20   25   30

Ser Gly Ala Pro Pro Pro Ser
            35

<210> 3
<211> 30

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<212> PRT
<213> Homo sapiens

<220>
<223> GLP-1

<400> 3
His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
 1               5                  10                  15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg
            20                  25                  30


<210> 4
<211> 39
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      exendin agonist

<220>
<221> MOD_RES
<222> (1)
<223> His, Arg or Tyr

<220>
<221> MOD_RES
<222> (2)
<223> Ser, Gly, Ala or Thr

<220>
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<222> (3)
<223> Asp or Glu

<220>
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<223> Ala or Thr

<220>
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<223> Ala, Phe, Tyr or naphthylalanine

<220>
<221> MOD_RES
<222> (7)
<223> Thr or Ser

<220>
<221> MOD_RES
<222> (8)
<223> Ala, Ser or Thr
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<220>
<221> MOD_RES
<222> (9)
<223> Asp or Glu

<220>
<221> MOD_RES
<222> (10)
<223> Ala, Leu, Ile, Val, pentylglycine or Met

<220>
<221> MOD_RES
<222> (11)
<223> Ala or Ser

<220>
<221> MOD_RES
<222> (12)
<223> Ala or Lys

<220>
<221> MOD_RES
<222> (13)
<223> Ala or Gln

<220>
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<222> (14)
<223> Ala, Leu, Ile, pentylglycine, Val or Met

<220>
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<222> (15)...(17)
<223> Ala or Glu

<220>
<221> MOD_RES
<222> (19)
<223> Ala or Val

<220>
<221> MOD_RES
<222> (20)
<223> Ala or Arg

<220>
<221> MOD_RES
<222> (21)
<223> Ala or Leu

<220>
<221> MOD_RES
<222> (22)
<223> Phe, Tyr or naphthylalanine

<220>
<221> MOD_RES
<222> (23)
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<223> Ile, Val, Leu, pentylglycine, tert-butylglycine or Met

<220>
<221> MOD_RES
<222> (24)
<223> Ala, Glu or Asp

<220>
<221> MOD_RES
<222> (25)
<223> Ala, Trp, Phe, Tyr or naphthylalanine

<220>
<221> MOD_RES
<222> (26)
<223> Ala or Leu

<220>
<221> MOD_RES
<222> (27)
<223> Ala or Lys

<220>
<221> MOD_RES
<222> (28)
<223> Ala or Asn

<220>
<221> MOD_RES
<222> (31)
<223> Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine
      N-alkylpentylglycine or N-alkylalanine

<220>
<221> MOD_RES
<222> (36)..(38)
<223> Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine
      N-alkylpentylglycine or N-alkylalanine

<220>
<221> MOD_RES
<222> (39)
<223> Ser, Thr, Tyr, Pro, homoproline, 3Hyp, 4Hyp, thioproline,
      N-alkylglycine, N-alkylpentylglycine or N-alkylalanine

<220>
<223> provided no more than three of Xaa5, Xaa6, Xaa8,
      Xaa10, Xaa11, Xaa12, Xaa13, Xaa14, Xaa15, Xaa16, Xaa17,
      Xaa19, Xaa20, Xaa21, Xaa24, Xaa25, Xaa26, Xaa27 or Xaa28
      are Ala; and the compound is not exendin-3 or exendin-4

<220>
<223> this peptide may encompass 28-39 residues, wherein
      residues 1-28 are constant and residues 29-39 may vary
      in length according to the specification

<400> 4
Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa

```
  1                 5                    10                    15
Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
              20                    25                    30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
          35
```

<210> 5
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term may be amidated

```
<400> 5
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
  1               5                    10                    15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly
              20                    25                    30
```

<210> 6
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

```
<400> 6
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
  1               5                    10                    15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn
              20                    25
```

<210> 7
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>

<223> C-term amidated

<400> 7
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
            20   25

<210> 8
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
     GLP-1 agonist

<220>
<223> C-term amidated

<400> 8
His Ala Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
            20   25

<210> 9
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
     GLP-1 agonist

<220>
<223> C-term amidated

<400> 9
His Gly Glu Gly Ala Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
            20   25

<210> 10
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
     GLP-1 agonist

```
<220>
<223> C-term amidated

<400> 10
His Gly Glu Gly Thr Ala Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1               5               10              15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
            20              25


<210> 11
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 11
His Gly Glu Gly Thr Phe Thr Ala Asp Leu Ser Lys Gln Leu Glu Glu
 1             5               10              15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
            20              25


<210> 12
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 12
His Gly Glu Gly Thr Phe Thr Ser Asp Ala Ser Lys Gln Leu Glu Glu
 1           5               10              15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
            20              25


<210> 13
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
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<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 13
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ala Lys Gln Leu Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
            20   25

<210> 14
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 14
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Ala Leu Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
            20   25

<210> 15
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 15
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Ala Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
            20   25

<210> 16
<211> 28
<212> PRT
<213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 16
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Ala Glu Glu
 1               5                  10                  15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
             20                  25


<210> 17
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 17
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Ala Glu
 1               5                  10                  15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
             20                  25


<210> 18
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 18
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Ala
 1               5                  10                  15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
             20                  25


<210> 19
<211> 28
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<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 19
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1               5                   10                  15

Ala Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
            20                  25


<210> 20
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 20
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1               5                   10                  15

Glu Ala Ala Arg Leu Phe Ile Glu Phe Leu Lys Asn
            20                  25


<210> 21
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 21
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1               5                   10                  15

Glu Ala Val Ala Leu Phe Ile Glu Phe Leu Lys Asn
            20                  25
```

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<210> 22
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 22
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1               5                  10                  15

Glu Ala Val Arg Ala Phe Ile Glu Phe Leu Lys Asn
            20                  25


<210> 23
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 23
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1               5                  10                  15

Glu Ala Val Arg Leu Phe Ile Ala Phe Leu Lys Asn
            20                  25


<210> 24
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 24
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1               5                  10                  15

Glu Ala Val Arg Leu Phe Ile Glu Ala Leu Lys Asn
            20                  25
```

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<210> 25
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 25
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1               5                   10                  15

Glu Ala Val Arg Leu Phe Ile Glu Phe Ala Lys Asn
            20                  25


<210> 26
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 26
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1               5                   10                  15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Ala Asn
            20                  25


<210> 27
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 27
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1               5                   10                  15
```

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Ala
            20   25

<210> 28
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 28
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
            20   25   30

Ser Gly Ala Pro Pro Pro
        35

<210> 29
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 29
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser
            20   25   30

Ser Gly Ala Pro Pro Pro
        35

<210> 30
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

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<400> 30
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
            20   25   30

Ser Gly Ala Pro Pro
          35

<210> 31
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
     GLP-1 agonist

<220>
<223> C-term amidated

<400> 31
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser
            20   25   30

Ser Gly Ala Pro Pro
          35

<210> 32
<211> 36
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
     GLP-1 agonist

<220>
<223> C-term amidated

<400> 32
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
            20   25   30

Ser Gly Ala Pro
          35

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<210> 33
<211> 36
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 33
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
1               5                   10                  15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser
                20                  25                  30

Ser Gly Ala Pro
            35


<210> 34
<211> 35
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 34
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
1               5                   10                  15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
                20                  25                  30

Ser Gly Ala
        35


<210> 35
<211> 35
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated
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<400> 35
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser
              20   25   30

Ser Gly Ala
         35

<210> 36
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
     GLP-1 agonist

<220>
<223> C-term amidated

<400> 36
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
              20   25   30

Ser Gly

<210> 37
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
     GLP-1 agonist

<220>
<223> C-term amidated

<400> 37
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser
              20   25   30

Ser Gly

<210> 38

<211> 33
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 38
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
  1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
              20   25   30

Ser

<210> 39
<211> 33
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 39
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
  1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser
              20   25   30

Ser

<210> 40
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 40

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
             20   25   30

<210> 41
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 41
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser
             20   25   30

<210> 42
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<400> 42
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro
             20   25   30

<210> 43
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 43
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu

```
        1           5              10             15
```

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro
```
                20              25             30
```

<210> 44
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<400> 44
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
```
  1           5              10             15
```

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly
```
                20              25             30
```

<210> 45
<211> 29
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<400> 45
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
```
  1           5              10             15
```

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly
```
                20              25
```

<210> 46
<211> 29
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 46
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
```
  1           5              10             15
```

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly
```
                20              25
```

<210> 47
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<221> MOD_RES
<222> (31)
<223> tPro

<220>
<221> MOD_RES
<222> (36)..(38)
<223> tPro

<220>
<223> C-term amidated

<400> 47
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Xaa Ser
            20   25   30

Ser Gly Ala Xaa Xaa Xaa
        35

<210> 48
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<221> MOD_RES
<222> (36)..(38)
<223> tPro

<220>
<223> C-term amidated

<400> 48
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
            20   25   30

Ser Gly Ala Xaa Xaa Xaa
         35

<210> 49
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<221> MOD_RES
<222> (31)
<223> NMeala

<220>
<223> C-term amidated

<400> 49
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Xaa Ser
             20   25   30

Ser Gly Ala Pro Pro
         35

<210> 50
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<221> MOD_RES
<222> (31)
<223> NMeala

<220>
<221> MOD_RES
<222> (36)..(37)
<223> NMeala

<220>
<223> C-term amidated

<400> 50
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Xaa Ser
         20   25   30

Ser Gly Ala Xaa Xaa
        35

<210> 51
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<221> MOD_RES
<222> (31)
<223> hPro

<220>
<221> MOD_RES
<222> (36)..(37)
<223> hPro

<220>
<223> C-term amidated

<400> 51
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Xaa Ser
         20   25   30

Ser Gly Ala Xaa Xaa
        35

<210> 52
<211> 36
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<221> MOD_RES
<222> (31)
<223> hPro

<220>
<221> MOD_RES
<222> (36)

<223> hPro

<220>
<223> C-term amidated

<400> 52
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Xaa Ser
            20   25   30

Ser Gly Ala Xaa
        35

<210> 53
<211> 35
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 53
Arg Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
            20   25   30

Ser Gly Ala
        35

<210> 54
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 54
His Gly Asp Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly
            20   25   30

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<210> 55
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<221> MOD_RES
<222> (6)
<223> Naphthylala

<220>
<223> C-term amidated

<400> 55
His Gly Glu Gly Thr Xaa Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
1               5                   10                  15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
            20                  25


<210> 56
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 56
His Gly Glu Gly Thr Phe Ser Ser Asp Leu Ser Lys Gln Met Glu Glu
1               5                   10                  15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn
            20                  25


<210> 57
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated
```

<400> 57
His Gly Glu Gly Thr Phe Ser Thr Asp Leu Ser Lys Gln Met Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn
            20   25

<210> 58
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 58
His Gly Glu Gly Thr Phe Thr Ser Glu Leu Ser Lys Gln Met Ala Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn
            20   25

<210> 59
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<221> MOD_RES
<222> (10)
<223> pentylgly

<220>
<223> C-term amidated

<400> 59
His Gly Glu Gly Thr Phe Thr Ser Asp Xaa Ser Lys Gln Leu Glu Glu
 1   5   10   15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
            20   25

<210> 60
<211> 28
<212> PRT
<213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<221> MOD_RES
<222> (22)
<223> Naphthylala

<220>
<223> C-term amidated

<400> 60
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
  1               5                  10                  15

Glu Ala Val Arg Leu Xaa Ile Glu Phe Leu Lys Asn
              20                  25


<210> 61
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<221> MOD_RES
<222> (23)
<223> tButylgly

<220>
<223> C-term amidated

<400> 61
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
  1               5                  10                  15

Glu Ala Val Arg Leu Phe Xaa Glu Trp Leu Lys Asn
              20                  25


<210> 62
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 62
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```
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1               5                   10                  15

Glu Ala Val Arg Leu Phe Ile Asp Phe Leu Lys Asn
             20                  25
```

<210> 63
<211> 33
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 63
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His Gly Glu Gly Thr Phe Thr Ser Asp Ala Ser Lys Gln Leu Glu Glu
 1               5                   10                  15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser
             20                  25                  30

Ser
```

<210> 64
<211> 29
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

<220>
<223> C-term amidated

<400> 64
```
His Gly Glu Gly Thr Phe Thr Ser Asp Ala Ser Lys Gln Met Glu Glu
 1               5                   10                  15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly
             20                  25
```

<210> 65
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Exendin or
      GLP-1 agonist

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<220>
<221> MOD_RES
<222> (31)
<223> hPro

<220>
<221> MOD_RES
<222> (36)..(37)
<223> hPro

<220>
<223> C-term amidated

<400> 65
His Gly Glu Gly Thr Phe Thr Ser Asp Ala Ser Lys Gln Met Glu Glu
 1               5                  10                  15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Xaa Ser
                20                  25                  30

Ser Gly Ala Xaa Xaa
            35


<210> 66
<211> 29
<212> PRT
<213> artificial sequence

<220>
<223> Agonist of GLP-1


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Ala is modified with an R group which can be 4-imidazopropionyl
      (des-amino-histidyl), 4-imidazoacetyl, or 4-imidazo-a,
      adimethyl-acetyl

<220>
<221> MOD_RES
<222> (19)..(19)
<223> Xaa is a Lys or Arg

<220>
<221> misc_feature
<222> (19)..(19)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> MOD_RES
<222> (27)..(27)
<223> Lys is modified with an R group consisting of C6 -C10 unbranched
      acyl, or is absent

<220>
```

<221> MOD_RES
<222> (29)..(29)
<223> Arg is modified with an R group consisting of Gly-OH or NH2

<400> 66

Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln
1   5   10   15

Ala Ala Xaa Glu Phe Ile Ala Trp Leu Val Lys Gly Arg
            20   25

<210> 67
<211> 19
<212> PRT
<213> artifical sequence

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Ser is modified by H2N, H2N-Ser, H2N-Val-Ser, H2N-Asp-Val-Ser. or
      any one of SEQ ID NO:68 to 74

<220>
<221> MOD_RES
<222> (17)..(17)
<223> Xaa is a Lys or Arg

<220>
<221> misc_feature
<222> (17)..(17)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> MOD_RES
<222> (19)..(19)
<223> Arg can be modified by the group consisting of NH2, OH, Gly-NH2,
      or Gly-OH

<400> 67

Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val
1   5   10   15

Xaa Gly Arg

<210> 68
<211> 4
<212> PRT
<213> artificial sequence

<220>

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<223> variable sequence insert for artificial GLP-1 analog

<400> 68

Ser Asp Val Ser
1

<210> 69
<211> 5
<212> PRT
<213> artificial sequence

<220>
<223> variable sequence insert for artificial GLP-1 analog

<400> 69

Thr Ser Asp Val Ser
1   5

<210> 70
<211> 6
<212> PRT
<213> artificial sequence

<220>
<223> variable sequence insert for artificial GLP-1 analog

<400> 70

Phe Thr Ser Asp Val Ser
1   5

<210> 71
<211> 7
<212> PRT
<213> artificial sequence

<220>
<223> variable sequence insert for artificial GLP-1 analog

<400> 71

Thr Phe Thr Ser Asp Val Ser
1   5

<210> 72
<211> 8
<212> PRT
<213> artificial sequence

<220>
<223> variable sequence insert for artificial GLP-1 analog

<400> 72

Gly Thr Phe Thr Ser Asp Val Ser
1   5

<210> 73
<211> 9
<212> PRT
<213> artificial sequence

<220>
<223> variable sequence insert for artificial GLP-1 analog

<400> 73

Glu Gly Thr Phe Thr Ser Asp Val Ser
1   5

<210> 74
<211> 10
<212> PRT
<213> artificial sequence

<220>
<223> variable sequence insert for artificial GLP-1 analog

<400> 74

Ala Glu Gly Thr Phe Thr Ser Asp Val Ser
1   5   10

<210> 75
<211> 29
<212> PRT
<213> artificial sequence

<220>
<223> artificial

<220>
<221> MOD_RES
<222> (1)..(1)
<223> neurtal amino acid or D or N-acylated or alkylated form of
      histidine can be substituted for His

<220>
<221> MOD_RES
<222> (2)..(2)
<223> small neutral amino acid can be substituted for Ala

<220>
<221> MOD_RES
<222> (3)..(3)
<223> acidic or neutral amino acid can be substituted for Glu

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<220>
<221>  MOD_RES
<222>  (4)..(4)
<223>  neutral amino acid can be substituted for Gly

<220>
<221>  MOD_RES
<222>  (9)..(9)
<223>  acidic amino acid can be substituted for Asp

<220>
<221>  MOD_RES
<222>  (10)..(10)
<223>  Tyr can be substituted for Val

<220>
<221>  MOD_RES
<222>  (12)..(12)
<223>  Lys can be substituted for Ser

<220>
<221>  MOD_RES
<222>  (15)..(15)
<223>  Asp can be substituted for Glu

<220>
<221>  MOD_RES
<222>  (16)..(16)
<223>  Ser can be substituted for Gly

<220>
<221>  MOD_RES
<222>  (17)..(17)
<223>  Arg can be substituted for Gln

<220>
<221>  MOD_RES
<222>  (18)..(18)
<223>  Arg can be substituted for Ala

<220>
<221>  MOD_RES
<222>  (20)..(20)
<223>  Lys can be substituted for a neutral amino acid, arg, or a D form
       of lys

<220>
<221>  MOD_RES
<222>  (20)..(20)
<223>  Gln can be substituted for Lys

<220>
<221>  MOD_RES
<222>  (25)..(25)
<223>  Trp can be substituted for an oxidation-resistant amino acid

<220>
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<221>  MOD_RES
<222>  (28)..(28)
<223>  Lys can be substituted for a neutral amino acid, arg, or a D form
       of lys

<220>
<221>  MOD_RES
<222>  (29)..(29)
<223>  Xaa is a Gly, Gly-Arg, Gly-Arg-Gly, or absent

<220>
<221>  misc_feature
<222>  (29)..(29)
<223>  Xaa can be any naturally occurring amino acid

<400>  75
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His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1   5   10   15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Xaa
                20   25